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RAW SEQUENCE LISTING  
PATENT APPLICATION: US/10/032,214

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Input Set : D:\216730us.app  
Output Set: N:\CRF3\05232002\J032214.raw

3 <110> APPLICANT: PUNNONEN, JUHA  
 4 LAZETIC, ALEXANDRA  
 5 LEONG, STEVEN R.  
 6 CHANG, CHIA-CHUN  
 7 APT, DORIS  
 8 GUSTAFSSON, CLAES  
 10 <120> TITLE OF INVENTION: NOVEL CO-STIMULATORY MOLECULES  
 12 <130> FILE REFERENCE: 02-106730US  
 14 <140> CURRENT APPLICATION NUMBER: 10/032,214  
 C--> 15 <141> CURRENT FILING DATE: 2002-12-20  
 17 <150> PRIOR APPLICATION NUMBER: 09/888,324  
 18 <151> PRIOR FILING DATE: 2001-06-22  
 20 <150> PRIOR APPLICATION NUMBER: PCT/US01/19973  
 21 <151> PRIOR FILING DATE: 2001-06-22  
 23 <150> PRIOR APPLICATION NUMBER: 60/213,946  
 24 <151> PRIOR FILING DATE: 2000-06-23  
 26 <150> PRIOR APPLICATION NUMBER: 60/241,245  
 27 <151> PRIOR FILING DATE: 2000-10-17  
 29 <160> NUMBER OF SEQ ID NOS: 320  
 31 <170> SOFTWARE: PatentIn Ver. 2.1  
 33 <210> SEQ ID NO: 1  
 34 <211> LENGTH: 891  
 35 <212> TYPE: DNA  
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 38 <220> FEATURE:  
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 44 cagctcttgg tgctcactgg tctttttac ttctgttcag gcataccccc aaagagtgtg 120  
 45 accaaaagag tgaaagaaac agtaatgcta tcctgtgatt acaacacatc cactgaagaa 180  
 46 ctgacaagcc ttccgatcta ttggcaaaag gatagaaaaa tggtgctggc catcctgcct 240  
 47 ggaaaagtgc aggtgtggcc tgagtacaag aaccgcacca tcaactgacat gaacgataac 300  
 48 ccccgattt tgatccctggc tctgcgcctg tcggacagtgc acacccatc ctgtgttatt 360  
 49 cagaagcctg ttttggaaagg ggcttataaa ctggggcacc tggcttcgtt gaggtaatg 420  
 50 atcagagctg acttccctgt ccctaccata aatgatctt gaaatccatc tcctaatatc 480  
 51 agaaggctaa ttgcgtcaac ctctggaggt tttccaaaggc cccacccatc ctgggtggaa 540  
 52 aatggagaag aattaaatgc taccaacaca acactgtccc aagatcctga aaccaagctc 600  
 53 tacatgatta gcagtgaact ggatttcaac atgacaagca atcacagctt cttgtgtt 660  
 54 gtcaagtatg gagacttaac agtgtcacag accttctact gcacaaatc caaaccacacc 720  
 55 ccttctgcta atcagcacct gacctggacc attattatcc cagtctcagc atttgggatt 780  
 56 tctgtatca ttgcagttt actaacatgc ctgacactgca gaaatgctgc aatacgcaga 840  
 57 cagagaagg agaatgaaatgca agttgtctc agtctccatg a 891

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63 <213> ORGANISM: Artificial Sequence  
65 <220> FEATURE:  
66 <223> OTHER INFORMATION: Description of Artificial Sequence: Synthetic  
67 nucleotide sequence  
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71 ctgctcctgg cgctggcggt tctccacttc tcttcaggta tcagccagg caccaagtgc 120  
72 gtgaaagaaa tggcagact gtcctgtat tacaacattt ctatcgatga actggcgaga 180  
73 atgcgcataat actggcagaa ggaccaacag atgggtctga gcatcatctc tggcaagtgc 240  
74 gaagtgtggc ctgagttacaa gaaccgcacc ttccccgaca tcattaacaa cctctccctt 300  
75 atgatcctgg cactgcgcct gtcggacaag ggcacctaca cctgcgttgt tcagaagaat 360  
76 gagaacgggt ctttcagacg ggagcacctg acctccgtga cactgtccat cagagctgac 420  
77 tccccctgtcc ctagcataac tgacatttggc catcccgccc ctaatgtgaa aaggataaga 480  
78 tgctccgcct ctggaggtt tccagagcct cgcctcgccct ggatggaa tggagaagaa 540  
79 ctaaacgcgc tcaacacgc gttgaccag gattttggaca cggagctcta cagcgtcagc 600  
80 agtgaactgg atttcaatgt gacaataac cacagcatcg tgtgtctcat caaataacggg 660  
81 gagctgtcgg tgtcacagat ctcccttgg agcaaaccctt agcaggagcc tccatttgat 720  
82 cagcttccat tctgggtcat tatcccagta agtggtgctt tggtgctcac tgcgttagtt 780  
83 ctctactgcc tggcctgcag acatgttgcg aggtggaaaa gaacaagaag gaatgaagag 840  
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98 ctgctcctgg cgctggcggt tctccacttc tcttcaggta tcagccagg caccaagtgc 120  
99 gtgaaagaaa tggcagact gtcctgtat tacaacattt ctatcgatga actggcgaga 180  
100 atgcgcataat actggcagaa ggaccaacag atgggtctga gcatcatctc tggcaagtgc 240  
101 gaagtgtggc ctgagttacaa aaaccgcacc ttccccgaca tcattaacaa cctctccctt 300  
102 atgatcctgg cactgcgcct gtcggacaag ggcacctaca cctgcgttgt tcagaagaat 360  
103 gagaacgggt ctttcagacg ggagcacctg acctccgtga cactgtccat cagagctgac 420  
104 tccccctgtcc ctagcataac tgacatttggc catcccgccc ctaatgtgaa aaggataaga 480  
105 tgctccgcct ctggagattt tccagagcct cgcctcgccct ggatggaa tggagaagaa 540  
106 ctaaacgcgc tcaacacgc gttgaccag gattttggaca cggagctcta cagcgtcagc 600  
107 agtgaactgg atttcaatgt gacaataac cacagcatcg tgtgtctcat caaataacggg 660  
108 gagctgtcgg tgtcacagat ctcccttgg agcaaaccctt agcaggagcc tccatttgat 720  
109 cagcttccat tctgggtcat tatcccagta agtggtgctt tggtgctcac tgcgttagtt 780  
110 ctctactgcc tggcctgcag acatgttgcg aggtggaaaa gaacaagaag gaatgaagag 840  
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114 <210> SEQ ID NO: 4  
115 <211> LENGTH: 912  
116 <212> TYPE: DNA

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 120 <223> OTHER INFORMATION: Description of Artificial Sequence: Synthetic  
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 125 cagctcttgg tgctcaactgg tctttttac ttctgttcag gcatcacccc aaagagtgtg 120  
 126 accaaaagag taaaagaaac agtaatgcata tcctgtgatt acagcacatc cactgaagaa 180  
 127 ctgacaagcc ttccgatcta ttggcaaaag gatagtaaaa tggtgctggc catcctgcct 240  
 128 ggaaaagtgc aggtgtggcc tgagtacaag aaccgcacca tcactgacat gaacgataac 300  
 129 ccccgattt tgatcctggc tctgcgcctg tcggacagtgc gcacccatc ctgtgttatt 360  
 130 cagaaggcctg atttggaaagg ggcttataaa ctggagcacc tgacttccgt gaggttaatg 420  
 131 atcagagctg acttccctgt ccctaccata aatgatctt gaaatccatc tcctaataatc 480  
 132 agaaggctaa ttgcgtcaac ctctggaggt ttcccaaggc cccacccatc ctgggtggaa 540  
 133 aatggagaag aattaaatgc taccacacca acagtttccc aagatccctgg aactgagctc 600  
 134 tacatgatta gcagtgaact ggatttcaat gtgacaaata accacagcat cgtgtgtctc 660  
 135 atcaaatacg gggagctgtc ggtgtcacag atctccctt ggagcaaaacc caagcaggag 720  
 136 cctcccatgg atcagcttcc atttctgggtc attatccctg taagtgggtc ttgggtgtctc 780  
 137 actgcggtag ttctctactg cctggcctgc agacatgtt gggatggaa aagaacaaga 840  
 138 aggaatgaag agacagtggg aactgaaagg ctgtccctta tctacttagg ctctgcgcaa 900  
 139 tcctcggtgtc ga 912  
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 154 accaaaagag taaaagaaac agtaatgcata tcctgtgatt acagcacatc cactgaagaa 180  
 155 ctgacaagcc ttccgatcta ttggcaaaag gatagtaaaa tggtgctggc catcctgcct 240  
 156 ggaaaagtgc aggtgtggcc tgagtacaag aaccgcacca tcactgacat gaacgataac 300  
 157 ccccgattt tgatcctggc tctgcgcctg tcggacagtgc gcacccatc ctgtgttatt 360  
 158 cagaaggcctg tttggaaagg ggcttataaa ctggagcacc tggttccgt gaggttaatg 420  
 159 atcagagctg acttccctgt ccctaccata aatgatctt gaaatccatc tcctaataatc 480  
 160 agaaggctaa ttgcgtcaac ctctggaggt ttcccaaggc cccacccatc ctgggtggaa 540  
 161 aatggagaag aattaaatgc taccacacca acagtttccc aagatccctgg aactgagctc 600  
 162 tacatgatta gcagtgaact ggatttcaat gtgacaaata accacagcat cgtgtgtctc 660  
 163 atcaaatacg gggagctgtc ggtgtcacag atctccctt ggagcaaaacc caagcaggag 720  
 164 cctcccatgg atcagcttcc atttctgggtc attatccctg taagtgggtc ttgggtgtctc 780  
 165 actgcggtag ttctctactg cctggcctgc agacatgtt gggatggaa aagaacaaga 840  
 166 aggaatgaag agacagtggg aactgaaagg ctgtccctta tctacttagg ctccgcgcaa 900  
 167 tcctcggtgtc ga 912  
 170 <210> SEQ ID NO: 6  
 171 <211> LENGTH: 912  
 172 <212> TYPE: DNA  
 173 <213> ORGANISM: Artificial Sequence

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175 <220> FEATURE:  
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182 accaaaagag tgaaagaaac agtaatgcta tcctgtgatt acagcacatc cactgaagaa 180  
183 ctgacaagcc ttccggatcta ttggcaaaag gatagtaaaa tgggtctggc catcctgcct 240  
184 ggaaaagtgc aggtgtggcc tgagtacaag aaccgcacca tcactgacat gaacgataac 300  
185 ccccgattt tgatcctggc tctgcgcctg tcggacagtg gcacctacac ctgtgttatt 360  
186 cagaagcctg ttttggaaagg ggcttataaa ctggagcacc tggcttcgt gaggttaatg 420  
187 atcagagctg acttccctgt ccctaccata aatgatctt gaaatccatc tcctaataatc 480  
188 agaaggctaa ttgtcaac ctctggaggt ttccaaggc cccacctcta ctgttggaa 540  
189 aatggagaag aattaaatgc taccacaca acaactgtccc aagatcctga aaccaggctc 600  
190 tacatgatta gcagtgaact ggatttcaat gtgacaaata accacagcat cgtgtgtctc 660  
191 atcaaatacg gggagctgtc ggtgtcacag atctccctt ggagcaaacc caagcaggag 720  
192 ccccccattt atcagttcc attctgggtc attatccctt taagtgggtc ttgggtgtctc 780  
193 actgcgttag ttctcttaccg cccggcctgc agacatgtt cgaggtggaa aagaacaaga 840  
194 aggaatgaag agacagtggg aactgaaagg ctgtccctta tctactttagg ctctgcgcaa 900  
195 tcctcggtt ga 912  
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203 <220> FEATURE:  
204 <223> OTHER INFORMATION: Description of Artificial Sequence: Synthetic  
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210 accaaaagag tgaaagaaac agtaatgcta tcctgtgatt acaacacatc cactgaagaa 180  
211 ctgacaagcc ttccggatcta ttggcaaaag gatagtaaaa tgggtctggc catcctgcct 240  
212 ggaaaagtgc aggtgtggcc tgagtacaag aaccgcacca tcactgacat gaacgataac 300  
213 ccccgattt tgatcctggc tctgcgcctg tcggacagtg gcacctacac ctgtgttatt 360  
214 cagaagcctg ttttggaaagg ggcttataaa ctggagcacc tggcttcgt gaggttaatg 420  
215 atcagagctg acttccctgt ccctaccata aatgatctt gaaatccatc tcctaataatc 480  
216 agaaggctaa ttgtcaac ctctggaggt ttccaaggc cccacctcta ctgttggaa 540  
217 aatggagaag aattaaatgc taccacaca acagttccc aagatcctgg aactgagctc 600  
218 tacatgatta gcagtgaact ggatttcaat gtgacaaata accacagcat cgtgtgtctc 660  
219 atcaaatacg gggagctgtc ggtgtcacag atctccctt ggagcaaacc caagcaggag 720  
220 ccccccattt atcagttcc attctgggtc attatccctt taagtgggtc ttgggtgtctc 780  
221 actgcgttag ttctcttactg cctggcctgc agacatgtt cgaggtggaa aagaacaaga 840  
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226 <210> SEQ ID NO: 8  
227 <211> LENGTH: 912  
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229 <213> ORGANISM: Artificial Sequence  
231 <220> FEATURE:

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238 accaaaagag tgaaagaaac agtaatgcta tcctgtgatt acaacacatc cactgaagaa 180  
239 ctgacaagcc ttccggatcta ttggcaaaag gatagtaaaa tggtgctggc catcctgcct 240  
240 ggaaaagtgc aggtgtggcc tgagtacaag aaccgcacca tcactgacat gaacgataac 300  
241 ccccgattt tgatccctggc tctgcgcctg tcggacagtg gcacctacac ctgtgttatt 360  
242 cagaaggcctg ttttggaaagg ggcttataaaa ctggagcacc tggcttcgt gaggtaatg 420  
243 atcagagctg acttccctgt ccctaccata aatgatctt gaaatccatc tcctaataatc 480  
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245 aatggagaag aattaaatgc taccaacaca acagttccc aagatcctgg aactgagctc 600  
246 tacatgatta gcagtgaact ggattcaat gtgacaaata accacagcat cgtgtgtctc 660  
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248 cctccattt atcagcttcc attctgggtc attatcccag taagtgggtc tttgggtgctc 780  
249 actgcggtag ttctctactg cctggcctgc agacatgtt cgaggtggaa aagaacaaga 840  
250 aggaatgaag agacagtggg aactgaaagg ctgtccctta tctacttagg ctctgcgcaa 900  
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256 <212> TYPE: DNA  
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259 <220> FEATURE:  
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261 nucleotide sequence  
263 <400> SEQUENCE: 9  
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265 cagctcttgg tgctcaactgg tctttttac ttctgttcag gcatcacccc aaagagtgtg 120  
266 accaaaagag tgaaagaaac agtaatgcta tcctgtgatt acagcacatc cactgaagaa 180  
267 ctgacaagcc ttccggatcta ttggcaaaag gatagtaaaa tggtgctggc catcctgcct 240  
268 ggaaaagtgc aggtgtggcc tgagtacaag aaccgcacca tcactgacat gaacgataac 300  
269 ccccgattt tgatccctggc tctgcgcctg tcggacaagg gcacctacac ctgcgtgggtt 360  
270 cagaaggcctg ttttggaaagg ggcttataaaa ctggagcacc tgacttcgt gaggtaatg 420  
271 atcagagctg acttccctgt ccctaccata aatgatctt gaaatccatc tcctaataatc 480  
272 agaaggctaa ttgtcaac ctctggaggt ttccaaggc cccacctcta ctggttggaa 540  
273 aatggagaag aattaaatgc taccaacaca acagttccc aagatcctgg aactgagctc 600  
274 tacatgatta gcagtgaact ggattcaat gtgacaaata accacagcat cgtgtgtctc 660  
275 atcaaatacg gggagctgtc ggtgtcacag atctccctt ggagcaaacc caagcaggag 720  
276 cctccattt atcagcttcc attctgggtc attatcccag taagtgggtc tttgggtgctc 780  
277 actgcggtag ttctctactg cctggcctgc agacatgtt cgaggtggaa aagaacaaga 840  
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279 tcctcggtt ga 912  
282 <210> SEQ ID NO: 10  
283 <211> LENGTH: 912  
284 <212> TYPE: DNA  
285 <213> ORGANISM: Artificial Sequence  
287 <220> FEATURE:  
288 <223> OTHER INFORMATION: Description of Artificial Sequence: Synthetic

RAW SEQUENCE LISTING ERROR SUMMARY  
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Please Note:

Use of n and/or Xaa have been detected in the Sequence Listing. Please review the Sequence Listing to ensure that a corresponding explanation is presented in the <220> to <223> fields of each sequence which presents at least one n or Xaa.

Seq#:95; N Pos. 223  
Seq#:97; N Pos. 929  
Seq#:111; N Pos. 827  
Seq#:153; N Pos. 893,894  
Seq#:157; N Pos. 599  
Seq#:174; Xaa Pos. 75  
Seq#:176; Xaa Pos. 310  
Seq#:190; Xaa Pos. 276  
Seq#:232; Xaa Pos. 298  
Seq#:236; Xaa Pos. 200  
Seq#:284; Xaa Pos. 6,8,14,18,19,20,27,55,60,69,101,106,110,113,120,124,135  
Seq#:284; Xaa Pos. 149,150,151,167,168,169,177,192,197,199,208,215,218,227  
Seq#:284; Xaa Pos. 249,261,263,267,268,273  
Seq#:287; Xaa Pos. 12,25,29,40,122,129,164,196,219,241  
Seq#:290; Xaa Pos. 50,55,56,113,120,123,124,125,126,128,129,130,131,135,138  
Seq#:290; Xaa Pos. 140,170,193,194,195,209,211,252,253  
Seq#:292; Xaa Pos. 9,35,55,110,124,135,183,192,211,215,216,217,231,288,290

## VERIFICATION SUMMARY

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Input Set : D:\216730us.app

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L:4459 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:95 after pos.:180  
L:4532 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:97 after pos.:900  
L:4923 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:111 after pos.:780  
L:6089 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:153 after pos.:840  
L:6198 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:157 after pos.:540  
L:6665 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:174 after pos.:64  
L:6851 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:176 after pos.:304  
L:7802 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:190 after pos.:272  
L:10636 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:232 after pos.:288  
L:10886 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:236 after pos.:192  
L:13590 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:284 after pos.:0  
L:13593 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:284 after pos.:16  
L:13599 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:284 after pos.:48  
L:13602 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:284 after pos.:64  
L:13608 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:284 after pos.:96  
L:13611 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:284 after pos.:112  
L:13614 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:284 after pos.:128  
L:13617 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:284 after pos.:144  
L:13620 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:284 after pos.:160  
L:13623 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:284 after pos.:176  
L:13626 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:284 after pos.:192  
L:13629 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:284 after pos.:208  
L:13632 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:284 after pos.:224  
L:13635 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:284 after pos.:240  
L:13638 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:284 after pos.:256  
L:13641 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:284 after pos.:272  
L:13841 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:287 after pos.:0  
L:13844 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:287 after pos.:16  
L:13847 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:287 after pos.:32  
L:13862 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:287 after pos.:112  
L:13865 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:287 after pos.:128  
L:13871 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:287 after pos.:160  
L:13877 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:287 after pos.:192  
L:13880 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:287 after pos.:208  
L:13886 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:287 after pos.:240  
L:14165 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:290 after pos.:48  
L:14177 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:290 after pos.:112  
L:14180 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:290 after pos.:128  
L:14186 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:290 after pos.:160  
L:14192 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:290 after pos.:192  
L:14195 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:290 after pos.:208  
L:14201 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:290 after pos.:240  
L:14361 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:292 after pos.:0  
L:14367 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:292 after pos.:32  
L:14370 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:292 after pos.:48  
L:14379 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:292 after pos.:96  
L:14382 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:292 after pos.:112

**VERIFICATION SUMMARY**

PATENT APPLICATION: US/10/032,214

DATE: 05/23/2002

TIME: 17:10:43

Input Set : D:\216730us.app

Output Set: N:\CRF3\05232002\J032214.raw

L:14385 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:292 after pos.:128

L:14394 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:292 after pos.:176

L:14400 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:292 after pos.:208